

REMARKS

I. Summary of the Examiner's Action

A. Claim Rejections

As set forth in paragraph 4 on page 2 of the March 17 Office Action, claims 1, 2, 4, 6 – 8, 13 – 15, 17, 19 – 21 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent Application Publication No. 2003/0043928 A1 to Ling *et al.* (hereinafter “Ling” or “the Ling application”).

As set forth in paragraph 5 on page 6 of the March 17 Office Action, claims 3, 5, 16 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ling in view of United States Patent No. 6,634,007 B1 to Koetter *et al.* (hereinafter “Koetter” or “the Koetter patent”).

As set forth in paragraph 6 on page 7 of the March 17 Office Action, claims 9 – 12 and 22 – 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ling in view of United States Patent No. 4,574,252 to Slack *et al.* (hereinafter “Slack” or “the Slack patent”).

As set forth in paragraph 7 on page 11 of the March 17 Office Action, claims 27 – 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ling in view of

Shor and further in view of United States Patent No. 4,718,066 to Rogard (hereinafter “Rogard” or “the Rogard patent”).

These rejections are respectfully disagreed with, and traversed below.

II. Interview on April 16, 2009

During an interview that occurred on April 16 in the case, Applicants’ undersigned representative explained to the Examiner that Ling may replace symbols with zeros as part of a coordinate puncturing operation occurring at the receiver, but that this was not enough because Ling did not describe or suggest the remaining elements required by Applicants’ claims. In particular, Applicants’ representative suggested amendments that are evident in the amendments presented in this response. The amendments make clear that Applicants’ invention determines which symbols have been degraded by a symbol degrading event and replaces those symbols. Since the Ling zero-insertion operations result from a bit-rate adjustment and not from detection of a symbol degrading event, Ling cannot describe or suggest the necessary additional elements of the independent claims. Further, Applicants’ representative determined that the Examiner silently has been applying a legal standard without citation – that Applicants’ claims run afoul of a purported injunction that one cannot claim a new use for an old apparatus. The Examiner is in error for two reasons – the Examiner has not supplied the requisite citations that support his rejection and the Examiner has misapplied the law. No agreement was reached.

III. Applicants' Response – Claim Rejections

A. Rejection of Claims 1, 2, 4, 6 – 8, 13 – 15, 17, 19 – 21 and 26
under 35 U.S.C. § 102(b)

Applicants reproduce amended claim 1 here (emphasis added):

1. A method to operate a digital signal receiver, comprising:
detecting the occurrence of a symbol degrading event for a received signal,
wherein the symbol degrading event occurs after transmission and before
reception of the received signal;
determining which symbols have been degraded by the symbol degrading event;
inserting zero symbols into a received symbol stream to replace symbols that have
been determined to have been degraded by the signal degrading event
prior to de-interleaving the received signal; and
error correction decoding the received symbol stream having the inserted zero
symbols.

Applicants respectfully submit that it is not seen where any of the art of record, whether taken singly or in combination, either describes or suggests the subject matter of claim 1.

Applicants have made a good-faith effort to educate the Examiner as to how their methods differ from those of Ling. Applicants believe that if the arguments were properly understood, the Examiner would understand that the current basis of rejection is insupportable. With all due respect, Applicants submit that the Examiner is not applying

the Ling reference on an element-by-element basis necessary to support an anticipation rejection. From this perspective, Applicants believe that the claims prior to the amendments set forth herein are patentable over the art of record. Nonetheless, in the interest of advancing prosecution, Applicants have proposed further amendments that traverse the current basis of rejection.

At issue here are the zero insertion operations performed by Applicants and Ling. Applicants have described in detail how the zero insertion operations in their invention occur when a symbol degrading event is detected, and serve to replace symbols degraded by the symbol degrading event. The zero insertion operations described by Ling are complementary operations associated with code puncturing. As the Examiner should understand, puncturing is performed to adjust bit rate. Although the method arguably may result in the replacement of symbols that have been degraded by a symbol degrading event, this only occurs by happenstance. Claim 1 now requires that a determination be made about which symbols have been degraded by a symbol degrading event. Symbols that have been degraded by a symbol degrading event are replaced. The description of the puncturing operations by Ling neither describes nor suggests that the zeros are inserted specifically to replace symbols that have been determined to be degraded. It is not enough for the Examiner to refer to discussion of how Ling's methods are intended to combat fading. The fact that the methods are intended to combat fading does not supply the missing subject matter. Anticipation is a strict standard. In order to support an anticipation rejection of claim 1, the Examiner has to point to a description that indicates

determination and replacement steps are performed. The Examiner has to point to description in Ling that indicates certain symbols are determined to be degraded by a symbol degrading event. The Examiner has to point to description in Ling that indicates those symbols which are determined to have been degraded are then replaced. Until the Examiner does that, the Examiner has not set forth a proper anticipation rejection.

With all due respect, Applicants submit that the Examiner simply is not interpreting Ling in accordance with Ling's teachings. The zero insertion operations described by Ling as discussed at length previously are performed at the receiver as complementary to puncturing operations that are performed at the transmitter. Although symbols may be degraded in the methods taught by Ling, Ling neither describes nor suggests to replace the degraded symbols with zeros.

Further, the Examiner has not supplied the complete reasons for maintenance of the rejections in the case. As was determined in the Interview the Examiner is relying on an unstated legal standard and believes that Applicants are seeking to claim a new use for an old apparatus and that this is improper. The Examiner is in error for two reasons – the Examiner has never supplied a citation to the legal precedent that purportedly supports this aspect of the rejection and even if one was supplied it would be in error because the Examiner has misapplied the law. Applicants' apparatus is not old because it does not merely comprise an element for inserting zeros. Rather, it comprises elements for detecting a symbol degrading event and for determining which symbols have been

degraded by the symbol degrading event. Taken together, Applicants are not seeking to claim a new use for an old apparatus. Rather, Applicants are seeking to claim new, novel and non-obvious apparatus and methods. If the Examiner persists in supporting his rejection with this legal theory, Applicants respectfully request that the Examiner supply specific citations to legal precedent that supports his position. If the Examiner is unable to provide such citations, Applicants request that the Examiner not rely on this erroneous basis of rejection.

As an aid to the Examiner, Applicants repeat argumentation here that has been previously presented and is still cogent. Applicants reproduce the following description of an aspect of the invention from the application appearing at page 2, lines 17 – 24 (emphasis added):

In the preferred embodiment zero symbols are inserted into the received signal stream, prior to the FEC decoder, at times that are estimated or otherwise determined to correspond to periods of jamming or severe fading. The zero symbols effectively ‘erase’ the severely degraded symbols. It is assumed that the presence of the zero symbols is less detrimental to the operation of the FEC decoder than the presence of the severely degraded symbols, especially in that the channel interleaving/de-interleaving operations result in the zero symbols being temporarily distributed over a large block of received symbols.”

The fact that zeros are inserted in Ling at the receiver to perform a complementary operation to an operation performed at the transmitter, and not to replace

symbols degraded by a symbol degrading event that occurred after transmission but prior to reception is apparent from this portion of Ling appearing at paragraph [0030], lines 13 – 21:

“Erasures (e.g., zero value indicative) are then inserted by a depuncturer 159 for coded bits punctured at system 110. The depunctured values are then de-interleaved by a channel de-interleaver 160 and further decoded by decoder 162 to a data sink 164. The channel deinterleaving, de-puncturing and de-coding are complementary to the channel interleaving, puncturing, and encoding performed at the transmitter.”

These operations neither concern “detecting the occurrence of a symbol-degrading event for a received signal”, nor “inserting zero symbols into a received symbol stream to replace symbols that have been determined to have been degraded by the symbol degrading event ...” as is required by claim 1. Rather, the operations relied upon by the Examiner are merely complementary operations performed at the receiver necessary to decode a received signal that has been encoded in a particular manner. Accordingly, the relied-upon operations of Ling, in particular, the insertion of zeros, have nothing to do with counteracting the effect of a symbol degrading event that occurs after transmission and before reception as in the case of Applicant’s claimed subject matter.

If the Examiner disagrees, Applicants request that the Examiner identify with particularity where in the method of Ling “inserting zero symbols into a received symbol stream to replace symbols that have been determined to have been degraded by the signal

degrading event prior to de-interleaving the received signal” is either described or suggested. Applicants respectfully submit that since the insertion of zeros in Ling is done as part of a receiver operation that is complementary to a transmitter operation that occurred during the encoding process, and *not* in response to a symbol degrading event, such subject matter will not be found.

As a result, Applicants submit that claim 1 is patentable over any of the art of record, whether taken singly or in combination. Applicants therefore respectfully request that the rejection of claim 1 be withdrawn. Applicants likewise request that the rejection of independent claim 14 be withdrawn both for reasons similar to those set forth above with respect to claim 1 and for reasons having to do with claim 14’s independently recited features. Claims 2, 4, 6 – 8, 13, 15, 17, 19 – 21 and 26 are patentable as depending from allowable base claims.

B. Rejection of Claims 3, 5, 16 and 18
under 35 U.S.C. § 103(a)

Koetter does not remedy the above-identified deficiencies of Ling. Accordingly, Applicants submit that claims 3, 5, 16 and 18 are patentable over the art of record both for the foregoing reasons set forth with respect to claim 1 and for reasons having to do with their separately-recited features. Applicants therefore respectfully request that the rejection of claims 3, 5, 16 and 18 be withdrawn.

C. Rejection of Claims 9 – 12 and 22 – 25
under 35 U.S.C. § 103(a)

Slack does not remedy the above-identified deficiencies of Ling. Accordingly, Applicants submit that claims 9 – 12 and 22 – 25 are patentable over the art of record both for the foregoing reasons set forth above with respect to claim 1 and for reasons having to do with their separately-recited features. Applicants therefore respectfully request that the rejection of claims 9 – 12 and 22 – 25 be withdrawn.

D. Rejection of Claims 21 – 31
under 35 U.S.C. § 103(a)

Applicants reproduce claim 27 here (emphasis added):

27. A method to receive a signal that passes through a channel that is periodically obstructed by a rotating propeller blade, comprising:
detecting the occurrence of a fading condition due to obstruction
by the propeller blade;
in response to detecting the occurrence of the fading condition,
determining which symbols comprising the signal have been
degraded by the fading condition;
inserting zero symbols into a received symbol stream at the
receiver to replace symbols that have been determined to
have been degraded by the fading condition caused by the
obstructing propeller blade;
de-interleaving the received symbol stream having the inserted
zero symbols; and
decoding the received symbol stream having the inserted zero
symbols.

Applicants respectfully submit that the foregoing arguments presented with respect to claim 1 are equally applicable to claim 27. Further, Rogard neither remedies the above-identified deficiencies of the Ling patent nor discloses the subject matter relied upon by the Examiner.

In particular, as set forth above, the Ling patent inserts zeros as part of complementary decoding operations. Nowhere does Ling either describe or suggest inserting zeros in response to detecting the occurrence of a fading condition where in the fading conditions occurs after transmission and before reception of the signal. Accordingly, Ling is not seen to disclose the subject matter for which it is relied upon by the Examiner.

In addition, Rogards is not seen to disclose “detecting the occurrence of a fading condition by the propeller blade”. The only portion of Rogard relied upon by the Examiner to describe or suggest this subject matter, which appears at column 1, lines 22 – 34, is reproduced here:

“In the case of a satellite to-earth station link, for which the invention is particularly suitable, the transmission of data is frequently affected by periods of fading or even complete interruption of communication (black-out). FIGS. 3 and 4 of the accompanying drawings, which represent the received signal displayed on the cathode screen of a spectrum analyzer, show typical examples of such disturbances: the signal of FIG. 3 corresponds to periodic fading such as may be produced by regularly spaced trees along which a receiver is

driving; FIG. 4 corresponds to temporary fading caused by passing under a bridge which crosses a motorway.”

Applicant respectfully submits that neither this portion, nor any other portion, of Rogard either describes or suggests the above-emphasized portion of claim 27. In particular, Rogard neither describes nor suggests inserting zeros in the manner of Applicants’ invention when a fading condition caused by propeller blades is detected.

As a result, Applicants submit that claim 27 is patentable over any of the art of record, whether taken singly or in combination. Applicants therefore respectfully request that the rejection of claim 27 be withdrawn. Applicants likewise request that the rejection of claims 28 – 29 be withdrawn as well since these claims depend from an allowable base claim. Independent claims 30 and 31 are patentable for reasons similar to those set forth above with respect to claim 27.



IV. Conclusion

Applicants submit that in light of the foregoing amendments and remarks the application is now in condition for allowance. Applicants therefore respectfully request that the outstanding rejections be withdrawn and that the case be passed to issuance.

Respectfully submitted,

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Date

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